



# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P412388WO		<b>FOR FURTHER ACTION</b> See Form PCT/PEA416	
International application No. PCT/GB2005/000125		International filing date (day/month/year) 14.01.2005	Priority date (day/month/year) 14.01.2004
International Patent Classification (IPC) or national classification and IPC C07F9/48			
Applicant STYLACATS LIMITED et al.			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau) a total of 3 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand 20.05.2005		Date of completion of this report 09.12.2005	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer Richter, H Telephone No. +49 89 2399-8539 	

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INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY

10/586204

International application No.  
PCT/GB2005/000125

AP20 Rec'd PCT/PTO 13 JUL 2006

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
    - ☐ international search (under Rules 12.3 and 23.1(b))
    - ☐ publication of the international application (under Rule 12.4)
    - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages

1-97 as originally filed

Claims, Numbers

1-9 received on 20.05.2005 with letter of 19.05.2005

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
    - ☐ the description, pages
    - ☐ the claims, Nos.
    - ☐ the drawings, sheets/figs
    - ☐ the sequence listing *(specify)*:
    - ☐ any table(s) related to sequence listing *(specify)*:
  4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
    - ☐ the description, pages
    - ☐ the claims, Nos.
    - ☐ the drawings, sheets/figs
    - ☐ the sequence listing *(specify)*:
    - ☐ any table(s) related to sequence listing *(specify)*:

\* If item 4 applies, some or all of these sheets may be marked "superseded."

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**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/GB2005/000125

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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**1. Statement**

Novelty (N)	Yes: Claims	1-9
	No: Claims	
Inventive step (IS)	Yes: Claims	1-9
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-9
	No: Claims	

**2. Citations and explanations (Rule 70.7):**

**see separate sheet**

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INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)

19 JUL 2006  
International application No.

PCT/GB2005/000125

Re Item V.

1 Reference is made to the following documents:

D1 : WO 03/031456 A (SOLVIAS AG; BERENS, ULRICH) 17 April 2003 (2003-04-17)

D2 : ARGOUARCH G ET AL: "A New Class of Ferrocene-Based 1,2-Bis(phosphanes) Possessing only Planar Chirality" EUROPEAN JOURNAL OF ORGANIC CHEMISTRY, WILEY-VCH VERLAG, WEINHEIM, DE, 2000, pages 2893-2899, XP002196647 ISSN: 1434-193X

D3 : US 6 194 593 B1 (IMAMOTO TSUNEO ET AL) 27 February 2001 (2001-02-27)

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INDEPENDENT CLAIM 1

The preparation method according to D1 claims 1-4 (part a) includes the preparation of chiral ligands. The claims also contains the option of a different definition for Z\*3 and Z\*4 or T (in the case of claim 4). However there is no example in D1 of such compound and preparation method therefor.

The subject-matter according to claim 1 is, therefore novel.

In view of the above document D1, the applicant argues that independent claim 1 is inventive for the following reasons:

- the claimed process is a selection from the general description in claim 1 of D1 but the selection is not obvious due to the surprising high yields of compounds having a chirality on the phosphine centre and which enantiomer is produced in excess as demonstrated by the examples. when the reagent  $\text{Cl-P}(\text{NMe}_2)_2$  is replaced by an analogous compound in which the non halogen substituents are different from each other

Furthermore, the analogy to example 5, namely to replace reagent  $\text{Cl-P}(\text{NMe}_2)_2$  by an analogous compound in which the non-halogen substituents are different from each other

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is itself not trivial. The reagent taught in D1, example 5 is a commercially available reagent, whereas reagents of the type Cl-PR1R2 are not commercially available and, moreover, are difficult to make. Thus, the skilled person has no obvious motivation for replacing the reagent taught in example 5 of D1 with an "analogous compound". To do so would require significant technical skill on the part of the skilled person, and it is unlikely that such effort would be undertaken given that D1 makes no suggestion or disclosure of the possible benefits in terms of the resulting excess ratio of a specifically handed phosphine group.

Yet another reason why the skilled person would not be inclined to take example 5 of D1 as a starting point for arriving at the process of the claimed invention is that the ligand taught in example 5 is in fact a ligand precursor. It will be noted in this connection that, having made the thiophene ligand of example 5, the very next step taught by D1 (in example 6) is to remove the two dimethylamino groups. That is hardly a good starting point for arriving at the applicant's claimed invention, in which the handedness of the phosphine group, with its two different substituents is all important.

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#### DEPENDENT CLAIMS 2-9

The combination of the features of dependent claims 2-9 are neither known from, nor rendered obvious by, the available prior art. The reasons are the connection with an acceptable claim 1 and the absence of the features "chiral auxiliary" and "R<sup>1</sup>"-bearing Grignard reagent or organolithium compound" in the cited prior art.

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